

**JP62231930A**  
**LIQUID CRYSTAL DISPLAY DEVICE**  
**STANLEY ELECTRIC CO LTD**

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**Abstract:** PURPOSE: To easily increase the size of a liquid crystal display device at low cost by mixing desired pigments with cholesteric- nematic mixed liquid crystal made in microcapsules and printing the mixture on a film substrate where a transparent electrode.

CONSTITUTION: Cholesteric liquid crystal and P-type nematic liquid crystal are mixed together into P-type liquid crystal, whose pitch is adjusted properly to about  $5W15\mu m$  to obtain microcapsules; and pigments of the three primary colors R, G, and B are mixed to form three kinds of inklike liquid crystal 10. Those three kinds of liquid crystal 10 are printed on an upper substrate 11 which is a film substrate, a lower substrate 12 provided with a counter electrode is arranged, and upper and lower polarizing plates 13 and 13 are provided on both sides. Thus, a liquid crystal cell which makes a full-color display is constituted and driven with a voltage signal applied between the upper and lower electrodes. The film substrates are used, so they can be connected to a printed board, electrode terminals are easily led out, and a little space for leading out the terminals is required, so the size is easily increased.

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